

Civil Engineering Department
De La Salle University - Manila

Experiment No. 10
Data Sheet for Strength Test of Concrete

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Date Tested: January 18, 2020

Room Temperature: 28⁰C

Weather: Mostly cloudy

Compression Test (Cylindrical Specimen): Age of specimen: 28 days

Specimen Code	Ave. H	Perpendicular Diameter (mm)		Ave. Dia. (mm)	Area, A (mm ²)	Weight (g)	Density (kg/m ³)	Max Load, P (kN)	fc=P/A (MPa)	fc'
C-1	203.50	101.30	101.80	101.75	8,131.28	4,040.70	2,441.93	262.60	32.30	31.46
		102.00	101.90							
C-2	202.20	102.40	102.80	102.40	8,235.50	4,040.10	2,426.17	252.20	30.62	
		102.00	102.40							

Calculation/ Remarks:

Specimen Data:

C-1

Average Diameter = $(101.30 + 101.80 + 102 + 101.90) / 4 = 101.75$ mm

Area = $\pi/4 * (101.75)^2 = 8,131.28$ mm²

Density = $[(4040.70 * 0.001)] / [(\pi * (101.75/2)^2 * 203.50)/10^9] = 2441.93$ kg/m³

fc = $(262.60 * 1000) / 8,131.28 = 32.30$ MPa

C-2

Average Diameter = $(102.40 + 102.80 + 102 + 102.40) / 4 = 102.40$ mm

Area = $\pi/4 * (102.40)^2 = 8,235.50$ mm²

Density = $[(4040.10 * 0.001)] / [(\pi * (102.40/2)^2 * 202.20)/10^9] = 2426.17$ kg/m³

fc = $(252.20 * 1000) / 8,235.50 = 30.62$ MPa

Ave. fc' = $(32.30 + 30.62) / 2 = 31.46$ MPa

Split Tension Test (Cylindrical Specimen): Age of specimen: 28 days

Specimen Code	L (fracture section)	Ave. L	d (fracture section)	Ave. d	Area, A (mm ²)	Weight (g)	Density (kg/m ³)	Max Load, P (kN)	$\sigma_t = 2P/\pi dL$	f _t
S-1	201.50	202	101.60	101.70	8,123.29	3975.20	2,428.58	69.30	2.15	2.17
	202.50		101.80							
S-2	201.50	202	101.80	101.90	8,155.27	4022.50	2,447.84	71.20	2.20	
	202.50		102.00							

Calculation/ Remarks:

Specimen Data:

S-1

Average L (fracture section) = $(201.50 + 202.50) / 2 = 202$ mm

Average d (fracture section) = $(101.60 + 101.80) / 2 = 101.70$ mm

Area = $\pi/4 * (101.70)^2 = 8,123.29$ mm²

Density = $[(3975.20 * 0.001)] / [(\pi * (101.70/2)^2 * 202)/10^9] = 2,428.58$ kg/m³

$f_t = (2 * 69.30 * 1000) / \pi * 101.70 * 202 = 2.15$ MPa

S-2

Average L (fracture section) = $(201.50 + 202.50) / 2 = 202$ mm

Average d (fracture section) = $(101.80 + 102) / 2 = 101.90$ mm

Area = $\pi/4 * (101.90)^2 = 8,155.27$ mm²

Density = $[(4022.50 * 0.001)] / [(\pi * (101.90/2)^2 * 202)/10^9] = 2,447.84$ kg/m³

$f_t = (2 * 71.20 * 1000) / \pi * 101.90 * 202 = 2.20$ MPa

Ave. $f_t = (2.15 + 2.20) / 2 = 2.17$ MPa

Flexural Test (Beam Specimen):

Age of specimen: 28 days

Specimen Code	Ave. total length	d (fracture section)	Ave. d	b (fracture section)	Ave. b	Weight (kg)	Density (kg/m ³)	Max Load, P (kN)	$\sigma_b = PL/(bd^2)$	f _b
B-1	609.10	151.40	150.80	152.20	152.65	34.20	2,439.15	25.40	3.29	3.33
		150.20		153.10						
B-2	608.20	152.40	151.50	152.50	152.40	33.90	2,414.10	26.10	3.36	
		150.60		152.30						

Note: Check the actual value of L in the testing machine.

Calculation/ Remarks:

Specimen Data:

S-1

Average L (fracture section) = $(201.50 + 202.50) / 2 = 202$ mm

Average d (fracture section) = $(101.60 + 101.80) / 2 = 101.70$ mm

Area = $\pi/4 * (101.70)^2 = 8,123.29$ mm²

Density = $[(3975.20 * 0.001)] / [(\pi * (101.70/2)^2 * 202)/10^9] = 2,428.58$ kg/m³

$f_t = (2*69.30*1000)/\pi*101.70*202 = 2.15$ MPa

S-2

Average L (fracture section) = $(201.50 + 202.50) / 2 = 202$ mm

Average d (fracture section) = $(101.80 + 102) / 2 = 101.90$ mm

Area = $\pi/4 * (101.90)^2 = 8,155.27$ mm²

Density = $[(4022.50 * 0.001)] / [(\pi * (101.90/2)^2 * 202)/10^9] = 2,447.84$ kg/m³

$f_t = (2*71.20*1000)/\pi*101.90*202 = 2.20$ MPa

Ave. $f_t = (2.15 + 2.20) / 2 = 2.17$ MPa